

REMARKS

This amendment is responsive to the Office Action of July 7, 2005. Claims 1-4 and 6-9 have been amended. Support for the amendments is found, for example, in the specification at paragraphs [0005], [0016], and [0019]. Claims 1-4 and 6-9 are pending and are submitted for reconsideration.

Claim Objections

Claim 3 is objected to because of an informality. As suggested by the examiner, claim 3 has been amended to replace “includes” with “include.” Reconsideration and withdrawal of the objection are respectfully requested.

35 U.S.C. § 103 Rejections

Claims 1-4 and 6-9 were rejected under 35 U.S.C. § 103 as unpatentable over the combination of WO 98/35720 (Haim) in view of U.S. Patent No. 6,405,072 (Cosman). It is submitted that this combination does not establish a *prima facie* case of obviousness for the claims as amended. The cited combination does not disclose, teach, or suggest all claimed features.

Claims 1, 3, 4, 6, 8 and 9

For example, claim 1 now recites a registration artifact “adapted for being held within a field of view of a fluoroscope, without attachment to the patient.” Claims 8 and 9 call for a registration artifact “wherein at least one of the first and second locations of the registration artifact is independent of the patient.”

In contrast Haim discloses an x-ray guided surgical location system that includes a reference element 20 having “fiducial marks 22a, 22b, and 22c.” (Haim at p. 20, lines 2-6, 21-22.) As part of an image registration process, the reference element 20 “is fixed to the body in a desired position” and “remains fixed to the body in this position during the surgical procedure.” (Haim at p. 24, lines 20-23.) The reference element 20 “should conform to and/or be easily fixed to a part of the body of a patient against which it is to be placed.” (Haim at p. 20, lines 31-32.) For example, the reference element 20 may be “fixed to the

back of a patient 32, preferably by gluing the element to the patient's skin." (Haim at p. 21, lines 3-4.) Thus, Haim discloses a reference element 20 that is fixed to the patient.

Similarly, Cosman discloses markers 20, 21, 23, and 24 that "provide references for transforming image scan data . . . to the coordinate space of the LINAC machine L." (Cosman at col. 4, lines 48-51.) The markers 20, 21, 23, and 24 "are on the patient P, located, for example, on or near the patient's skin." (Cosman at col. 4, lines 37-39.) The "markers 20, 21, 23 and 24 are fixed on the patient." (Cosman at col. 8, lines 5-6.) For example, "radiopaque circles can be adhered to the skin" or "reflective markers can be placed . . . on the patient's skin." (Cosman at col. 4, lines 44-47.) In other embodiments, markers may be "adhesively secured to the patient P" or "threadable engaged with bone B beneath the skin of the patient P." (Cosman at col. 9, lines 40-50.) Thus, Cosman discloses markers that are fixed to the patient.

Applicants can find no teaching or suggestion in Haim or Cosman (alone or in combination) of a registration artifact that is located "without attachment to the patient" as called for in claim 1 or "independent of the patient" as called for in claims 8 and 9.

For at least this reason, reconsideration and withdrawal of the rejection of claims 1, 8, and 9 are respectfully requested. Claims 3, 4, and 6 depend from claim 1 and are allowable therewith without regard to further patentable subject matter contained therein. Reconsideration and withdrawal of the rejection of claims 3, 4, and 6 are therefore also respectfully requested for at least this reason.

Claims 2, 7, 8, and 9

Claim 2 recites a registration method that includes capturing a first fluoroscopic image with "the registration artifact in the first location," "relocating the registration artifact to a second location," capturing a second fluoroscopic image with "the registration artifact in the second location," and "registering the first and second fluoroscopic images." Claim 7 recites an image guided surgery system that includes a computer "adapted to compensate for changes in position of the registration artifact from the first location to the second location when registering the first and second images."

In contrast, as explained above, Haim discloses a reference element 20 that "is fixed to the body in a desired position" and "remains fixed to the body in this position during the

surgical procedure.” (Haim at p. 24, lines 20-23.) The registration “element 20 does not move during a surgical procedure, so that the signal- and image-based coordinates will remain in registration.” (Haim at p. 22, line 32 to p. 23, line 1.) Thus, Haim discloses a registration process that requires the registration element 20 to remain fixed in a single location on the patient.

Similarly, Cosman discloses fixing markers 20, 21, 23, and 24 to the patient in “specific locations” that “are determined . . . relative to the anatomy of the patient P and the selected internal anatomical targets.” (Cosman at col. 6, lines 8-16.) Coordinate “[t]ransformations . . . are accomplished by referencing [the] markers 20, 21, 23 and 24 which are located on the patient P” to enable registration of scan data space and camera data space. (Cosman at col. 5, lines 51-58.) “Knowing the coordinates [of the markers 20, 21, 23, and 24] in scan space and the coordinate locations of anatomical objects relative to [the markers 20, 21, 23, and 24] target sites to be radiated are determined relative to the index points defined by the markers 20, 21, 23 and 24.” (Cosman at col. 5, line 59 to col. 6, line 4.) The registration process of Cosman, therefore, requires the markers 20, 21, 23, and 24 to remain fixed on the patient in specific locations relative to the selected internal anatomical targets.

There is no teaching or suggestion in Haim or Cosman (alone or in combination) of a registration artifact that may be relocated during a registration process as called for in claim 2 or a computer that can compensate for relocation of the registration artifact when registering images as called for in claim 7.

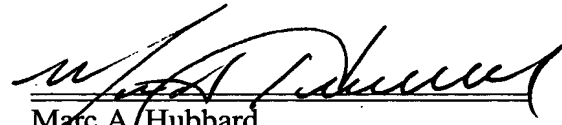
For at least these reasons, reconsideration and withdrawal of the rejection of claims 2 and 7 are respectfully requested. Claims 8 and 9 depend from claims 7 and 2, respectively, and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejection of claims 8 and 9 are respectfully requested.

CONCLUSION

Applicant respectfully requests reconsideration and allowance of the application in view of the foregoing amendments and remarks. Please telephone the undersigned representative should he be of any assistance in connection with the reconsideration.

In the event that any fees are due with respect to the filing of this paper, the Commissioner is hereby authorized to charge Deposit Account No. 13-4900 of Munsch Hardt Kopf & Harr, P.C., referencing Attorney Docket No. 4204.6-2.

Respectfully submitted,



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